

**Preshower project at
UTFSM
(progress report)**

15 August 2013

Preshower project (Staff and Roles)

Director, SiLab Detector Laboratory: Sergey Kuleshov

Project Coordination: Will Brooks

Production manager: Alison Sherman

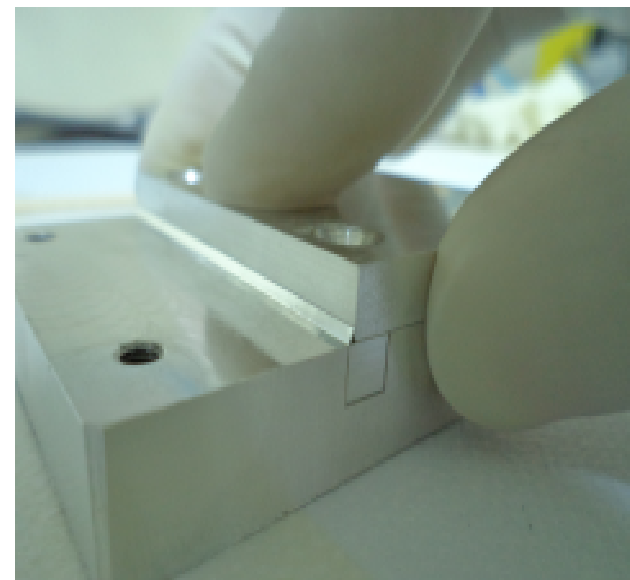
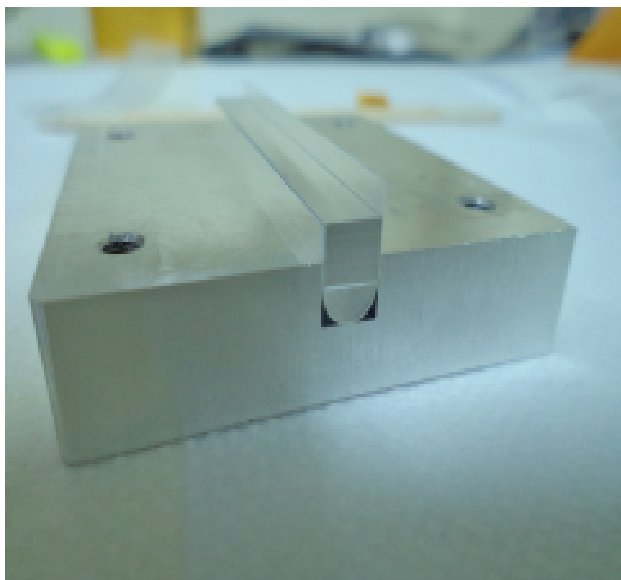
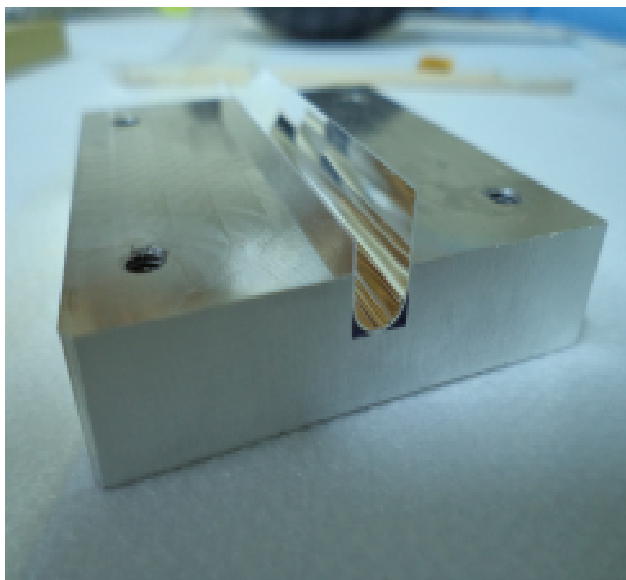
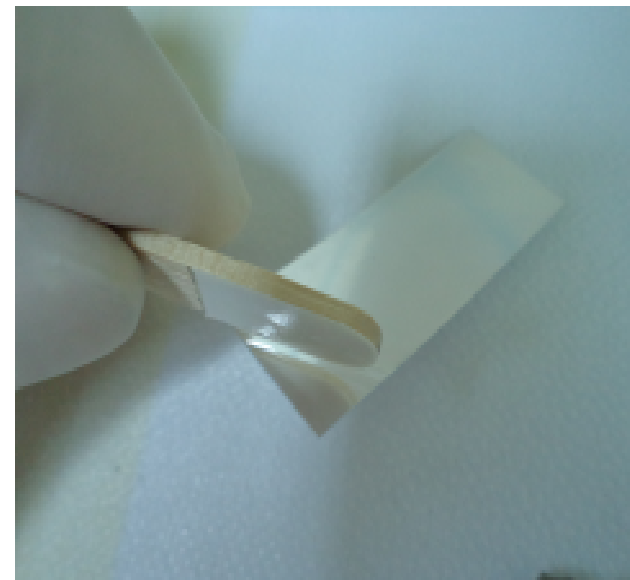
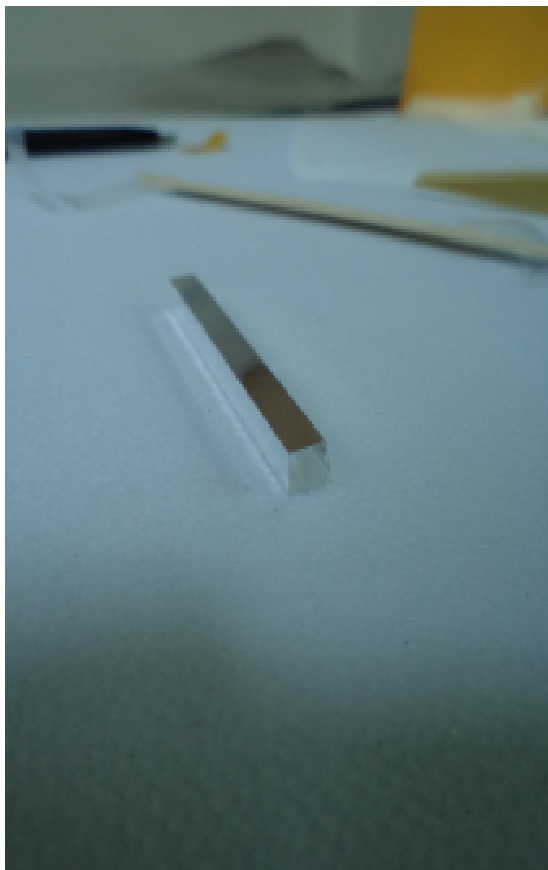
Electronics engineering: Esteban Zambrano, Alam Toro, Francisco Martinez

Mechanics engineering: Juan (Iñaki) Vega, Elias Rozas, Sebastian Cepeda, Pavlo Bazalyeyev

Software coordination: Hayk Hakobyan

Software engineering: Esteban Zambrano, Juan Pavez

Wrapping technique (crystal covering by film)

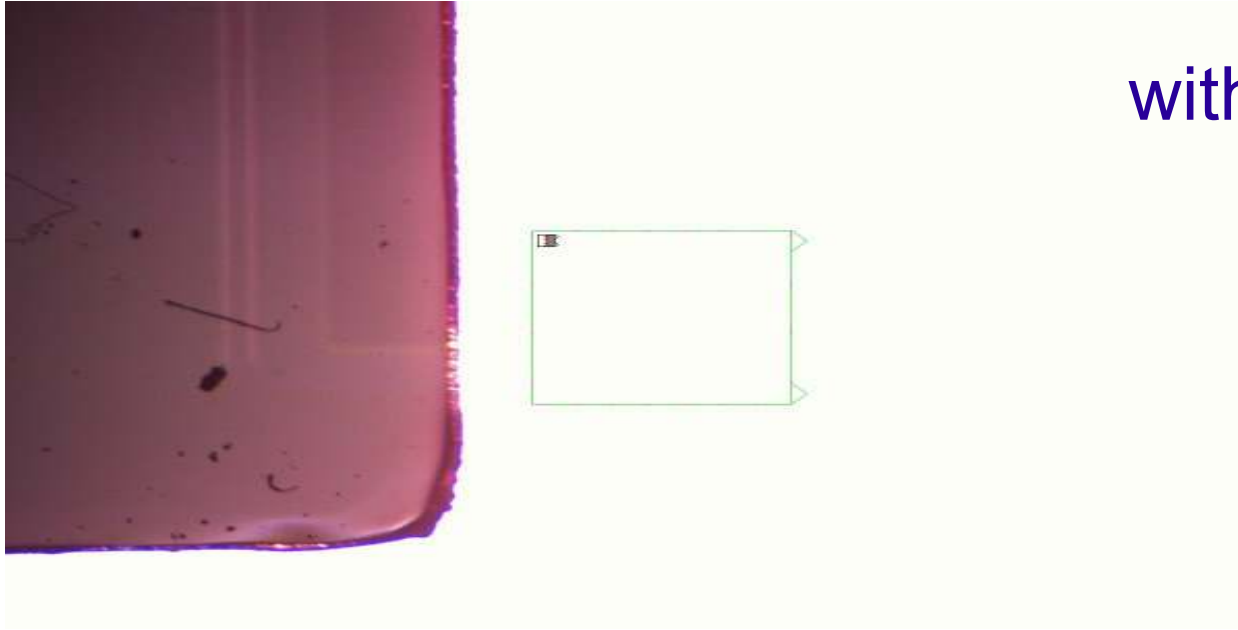


Vacuum oven for heating crystal plastic wrapping

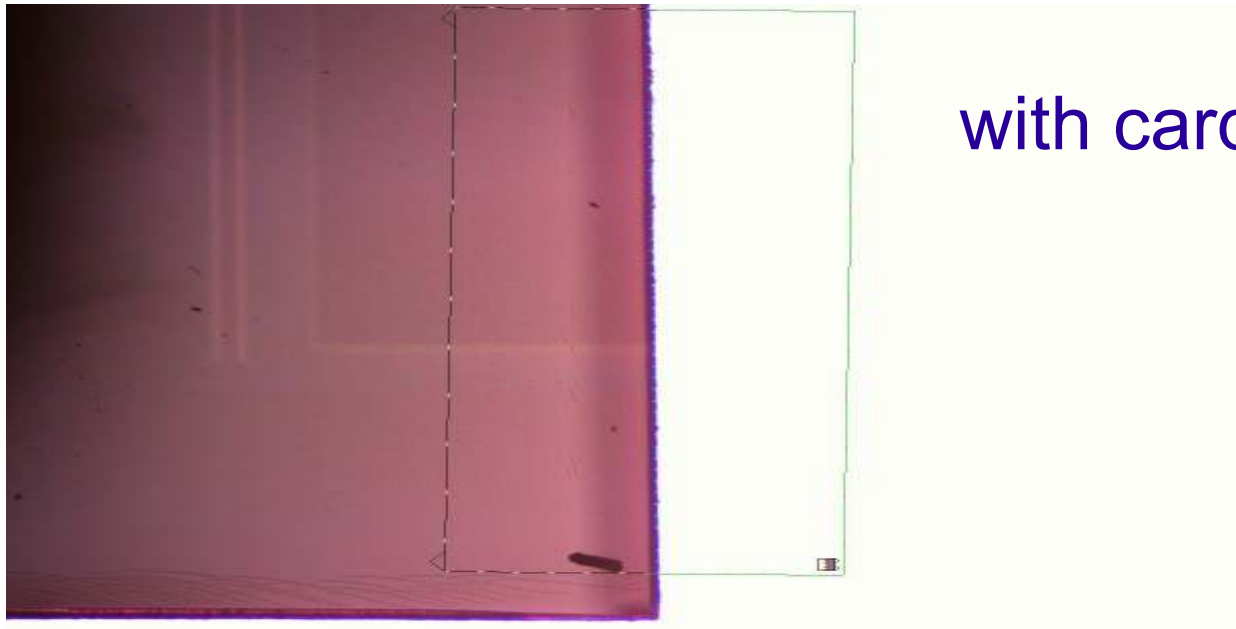


Film cutting technique

with Laser



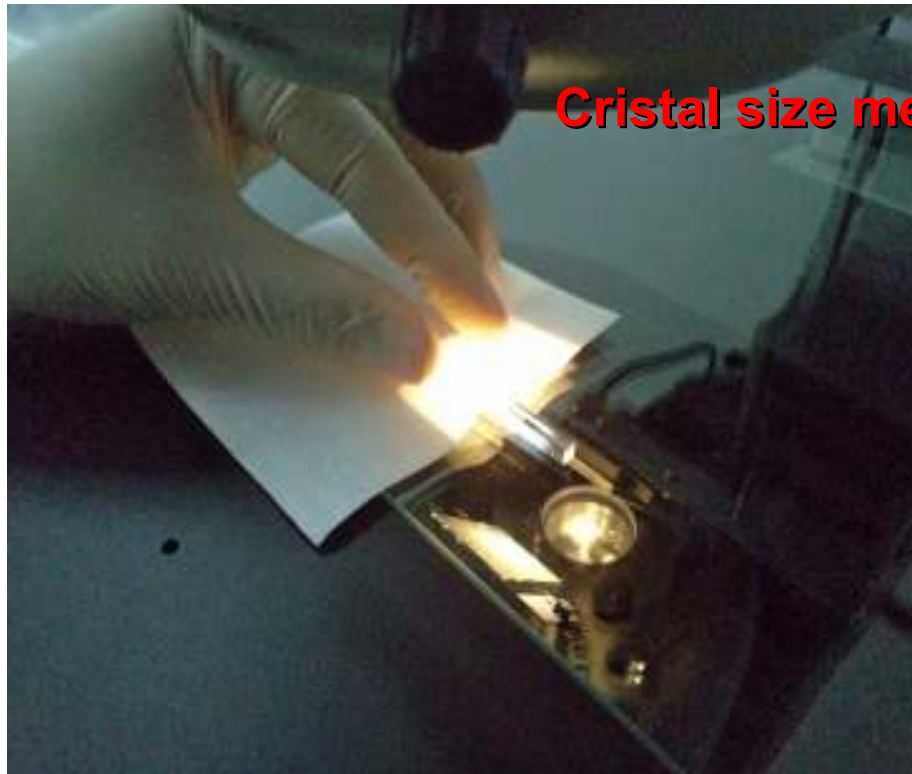
with cardboard knife



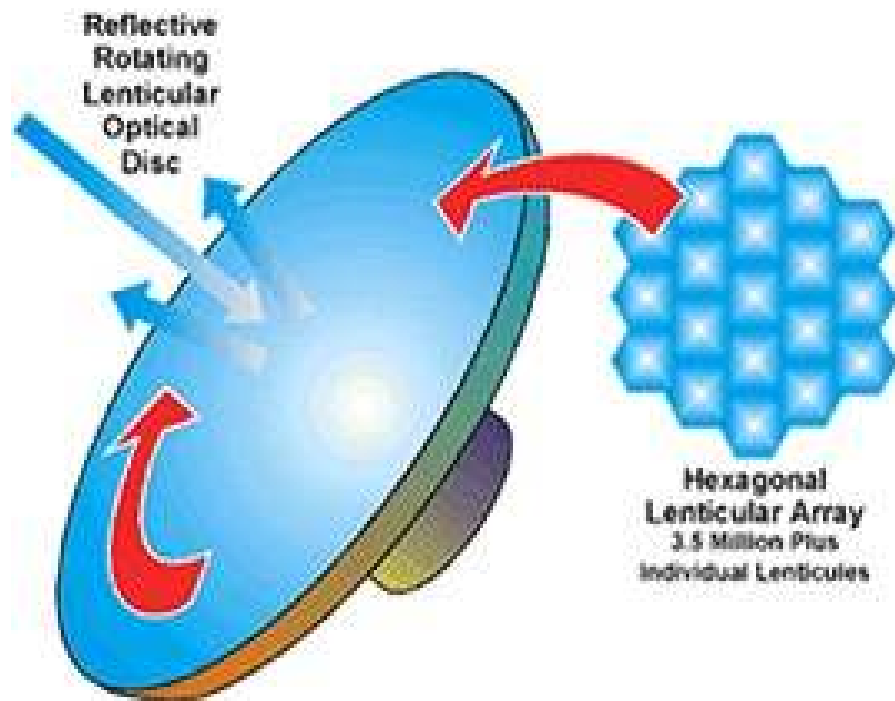
Film cutting



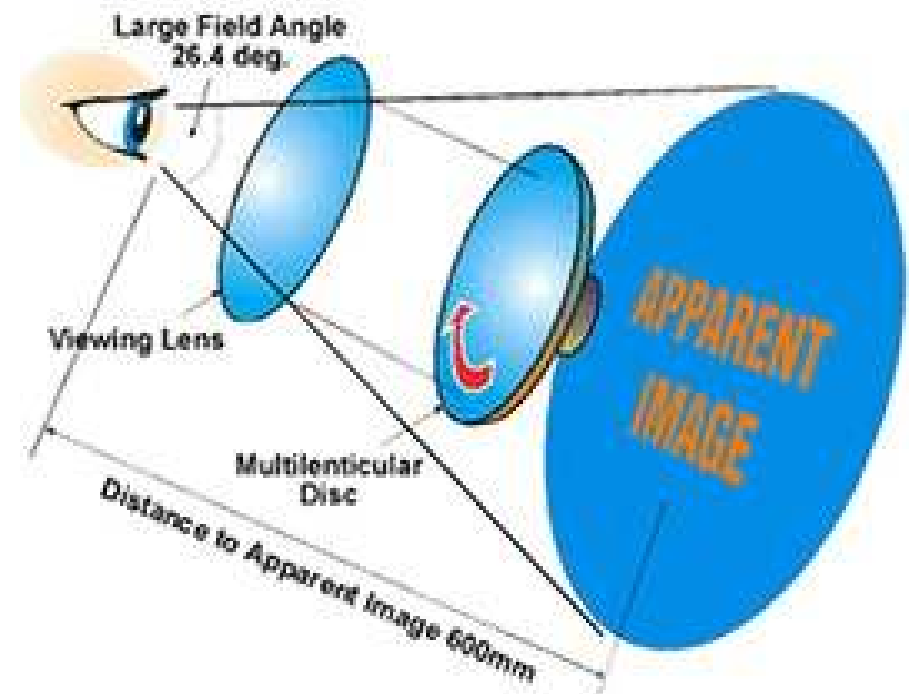
Cristal size measuring with Dynascope



Dynascope uses a 148mm diameter multi-lenticular disc surface comprises of over 3.5 million individual lenticules (lenses), each measuring just 70 microns in size. The Dynascope™ disk spins at 3,400rpm to merge the millions of individual optical paths, delivering a smooth expanded-pupil stereo image with a generous depth of focus and a wide field of view.

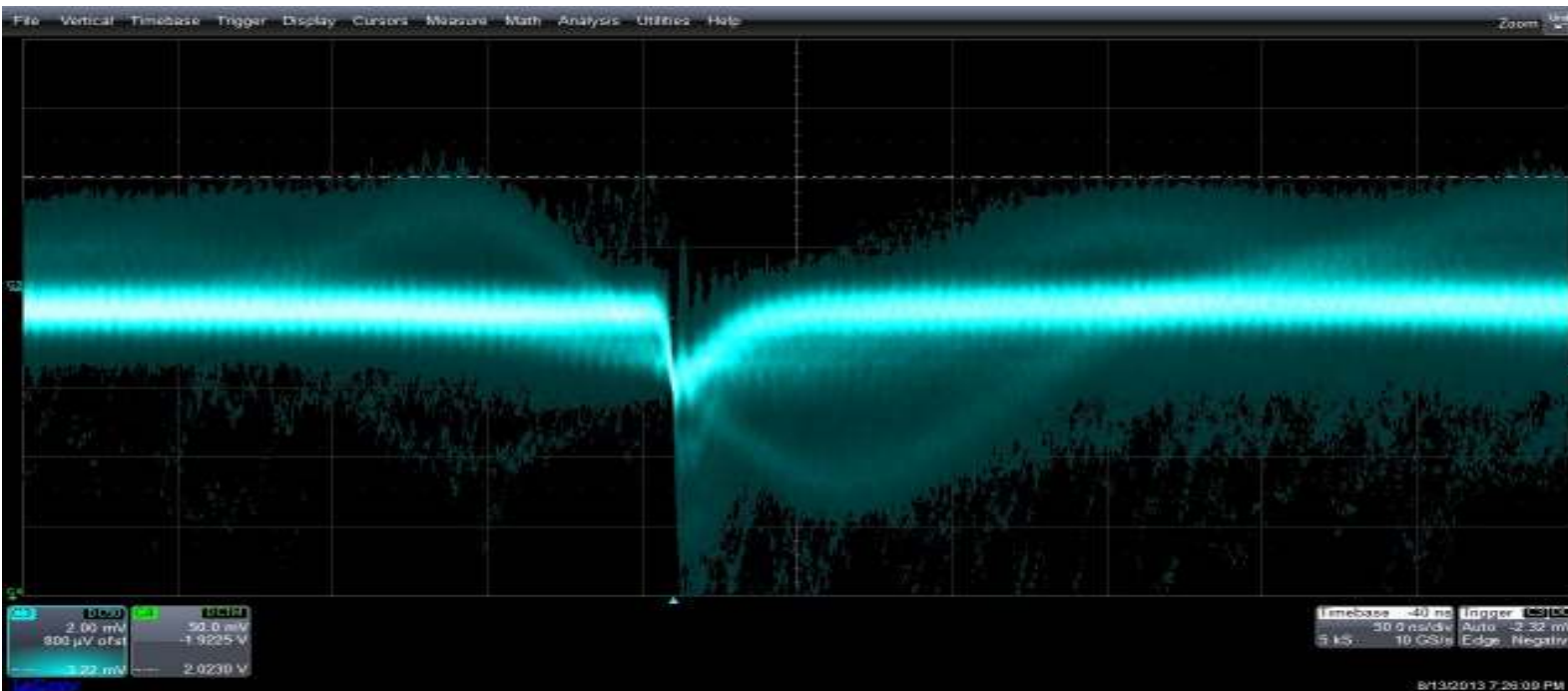


ASPHERIC MULTILENTICULAR DISC DETAIL

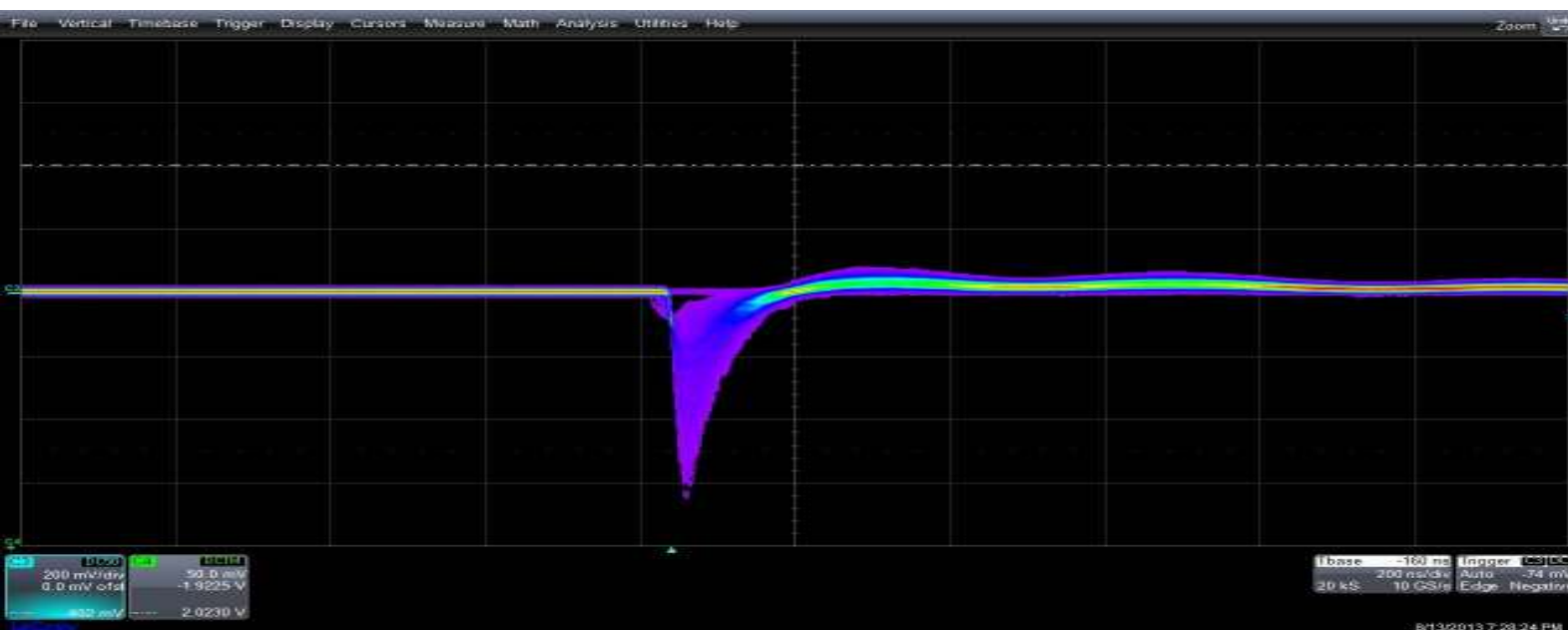


OPTICAL PARAMETERS

Oscilloscope outputs for single crystal tests with the collimated photon tagger



Amplifier output

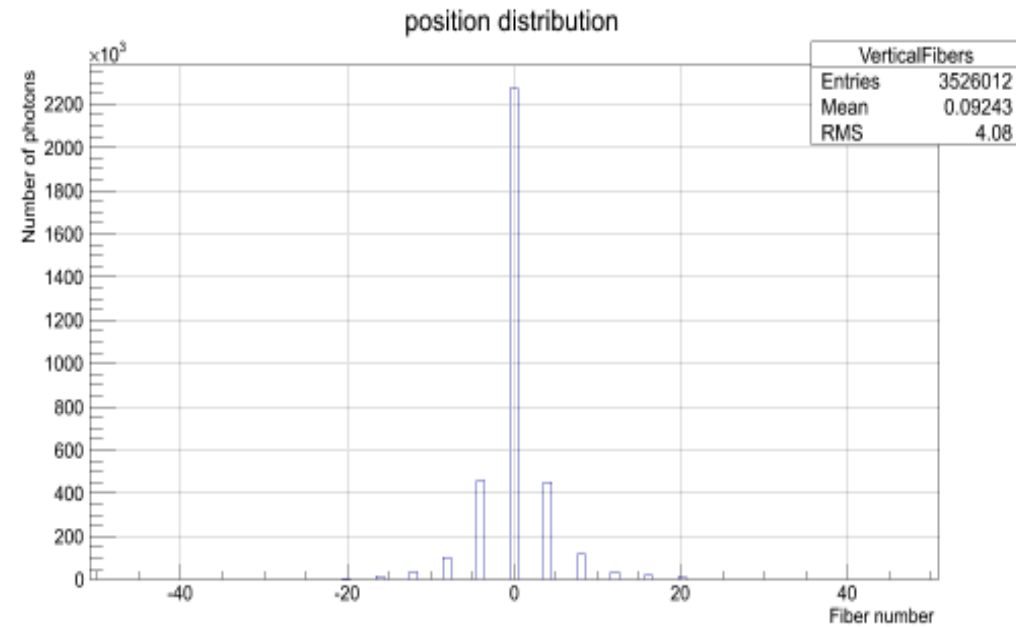
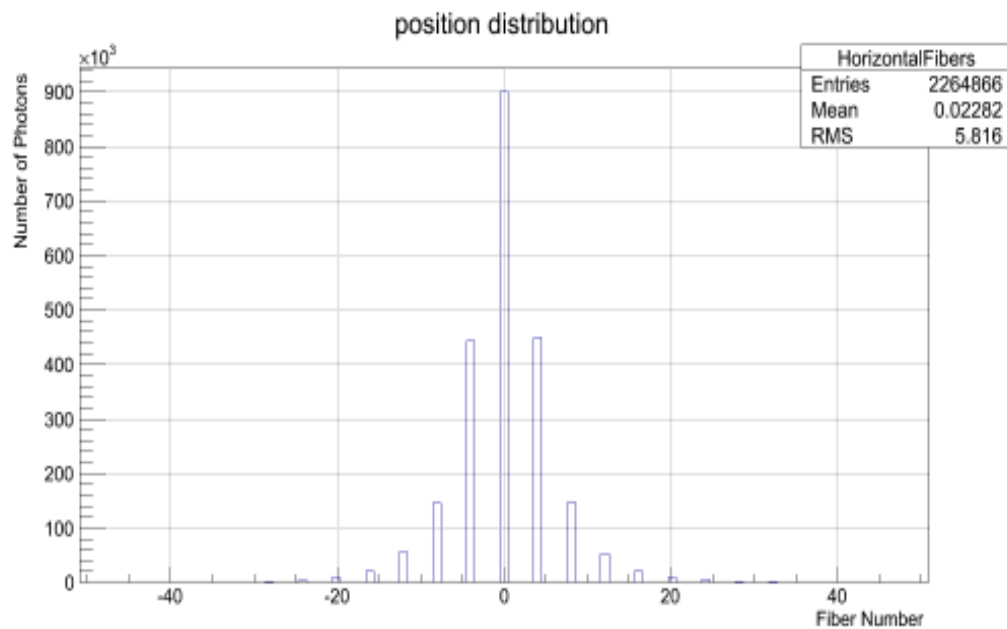
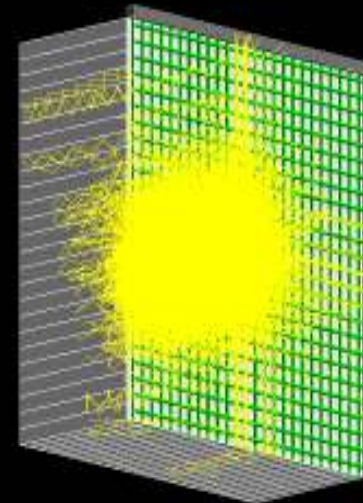
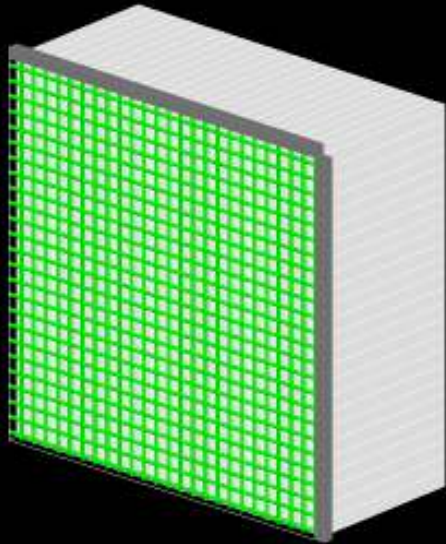


Single photon level

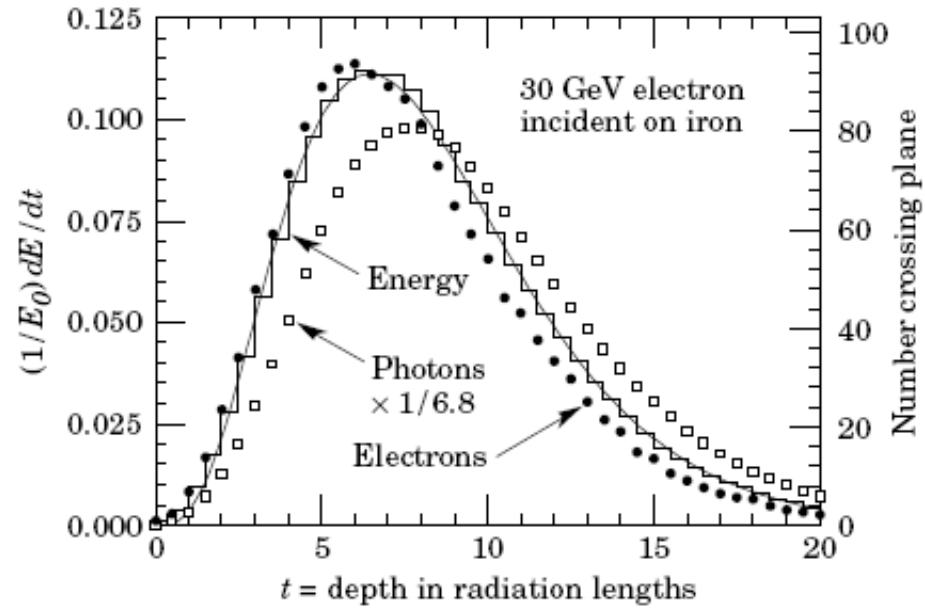
Data Acquisition System



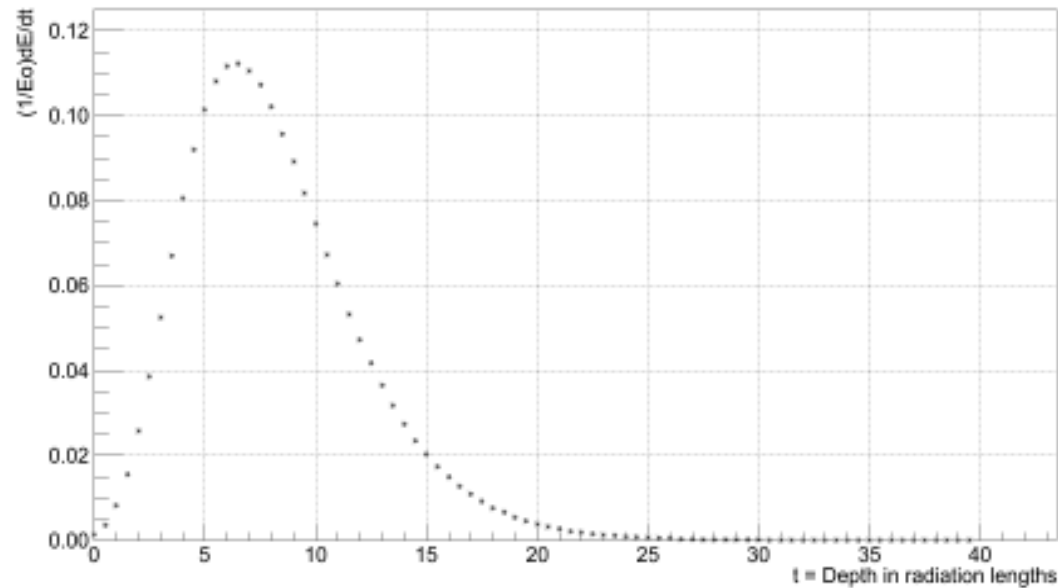
Preshower Geant4 simulations



30 GeV electron induced-cascade in iron from PDG

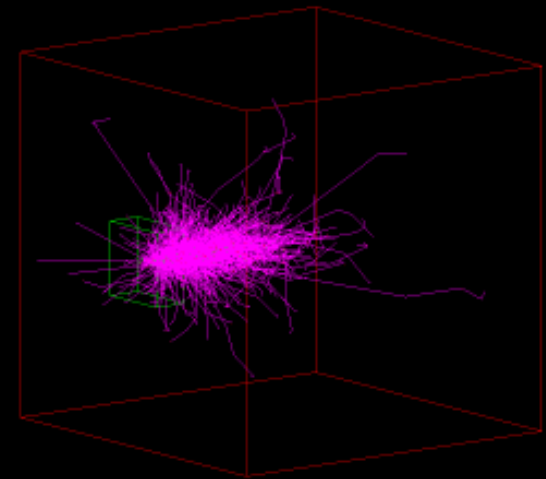
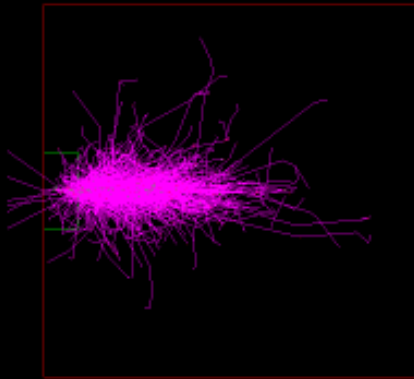
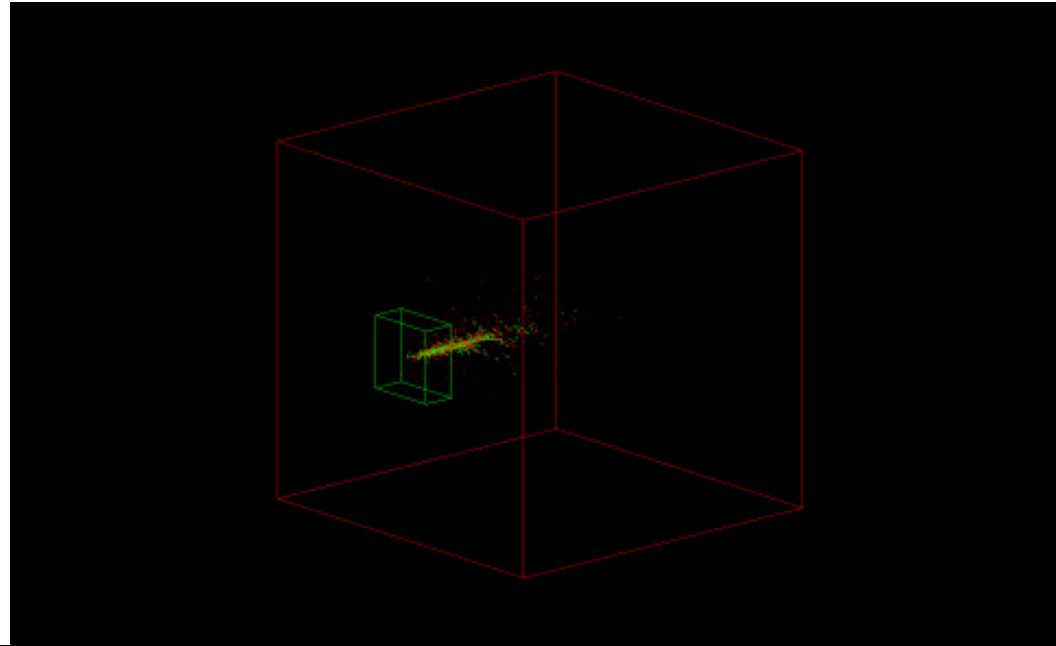


Mean energy deposition in Iron - 1000 events



Our simulations

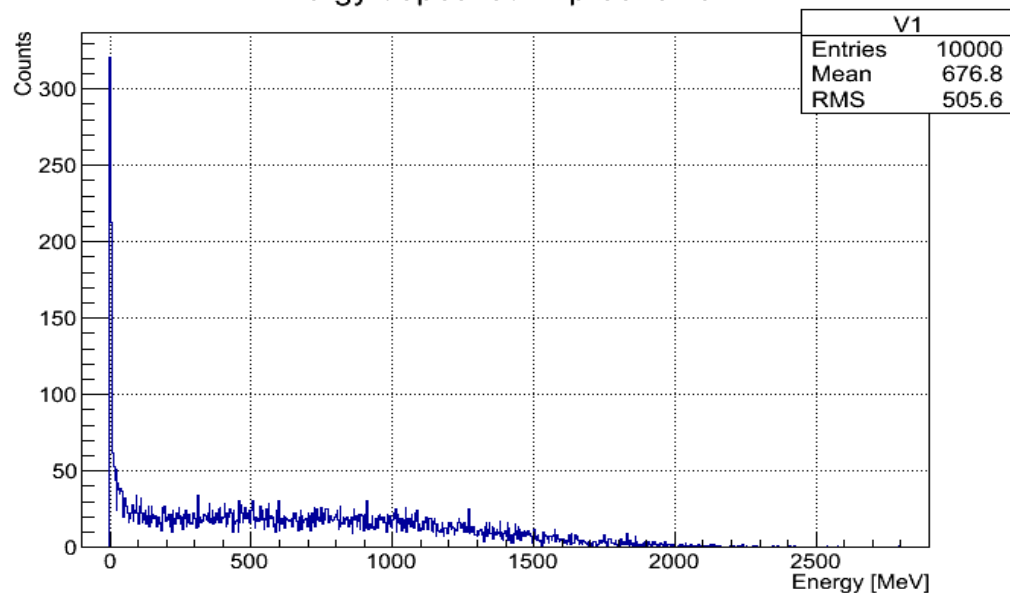
Step by step simulation test studies



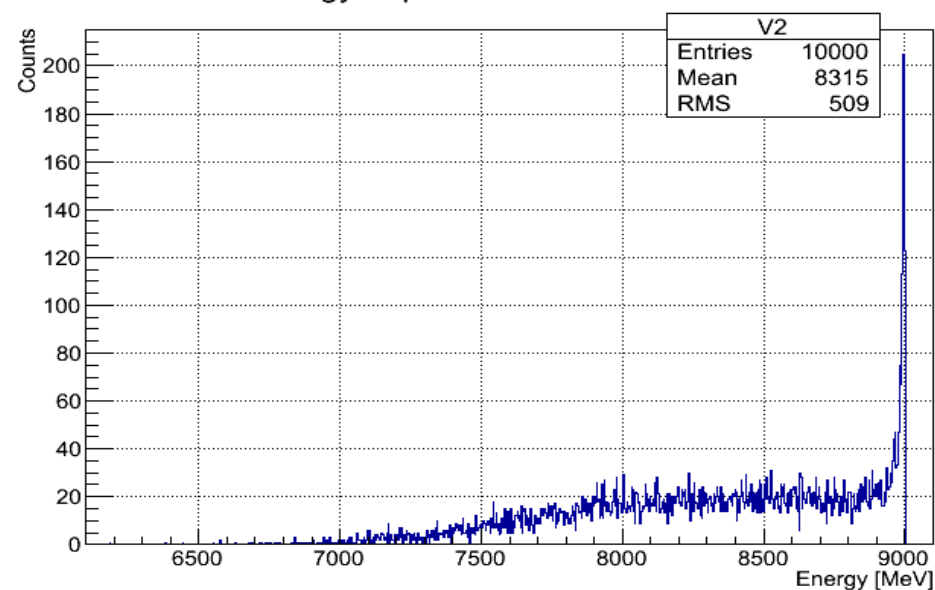
Energy deposition studies per volume

9 GeV photons coincident in the center of the Preshower

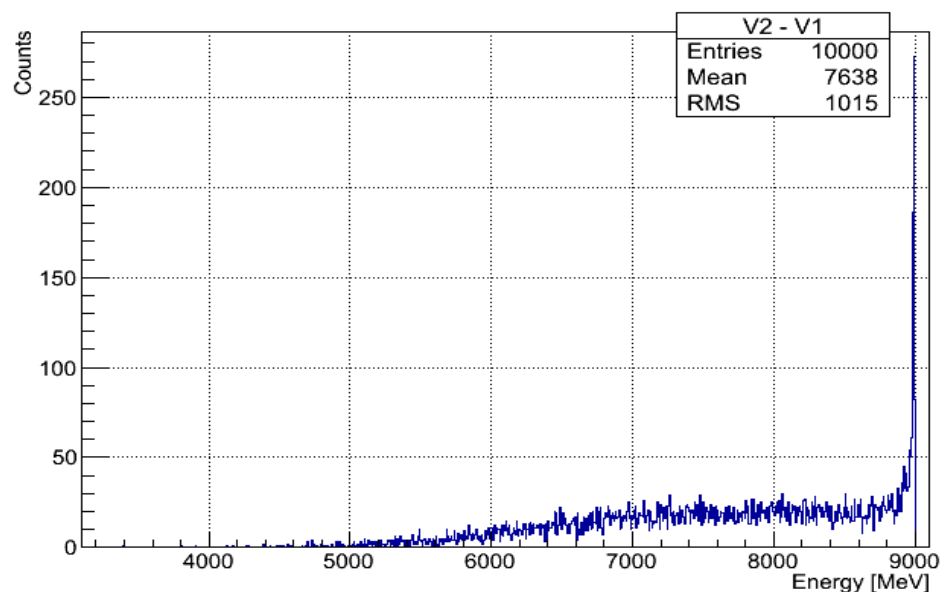
Energy deposited in preshower



Energy deposited in rear detector



Rear detector - Preshower



Rear detector vs Preshower

